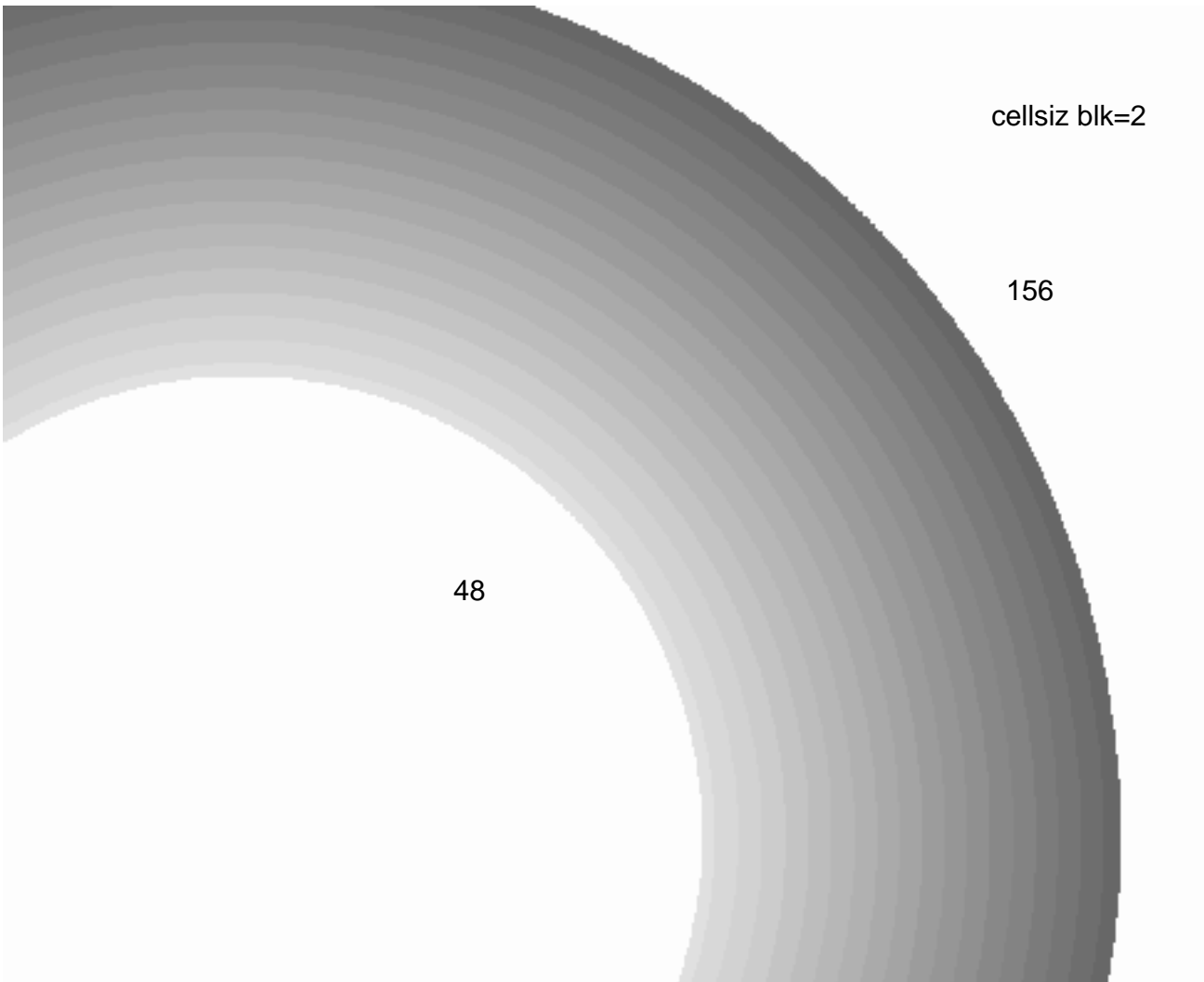
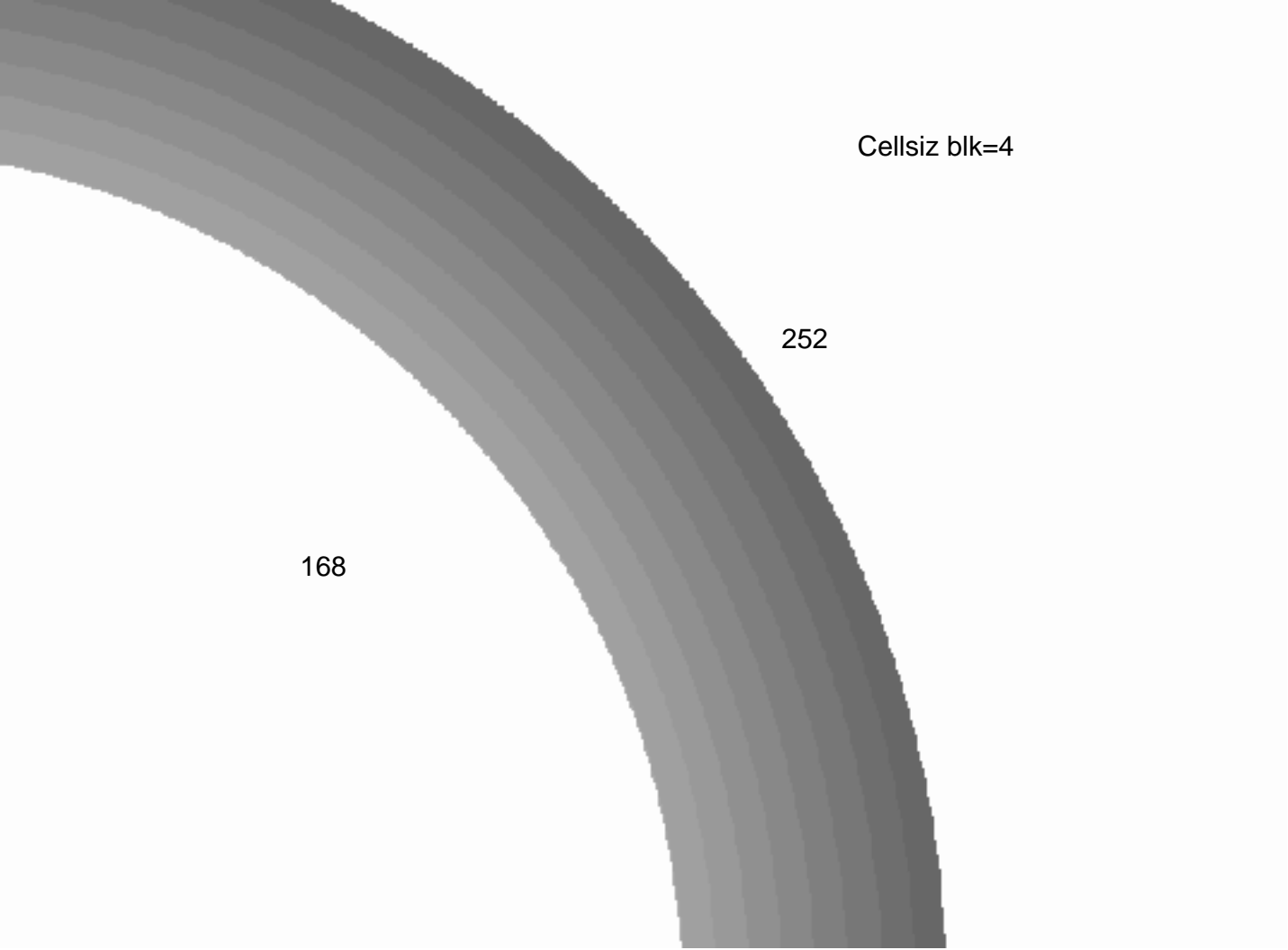


Cellsize/blk=1

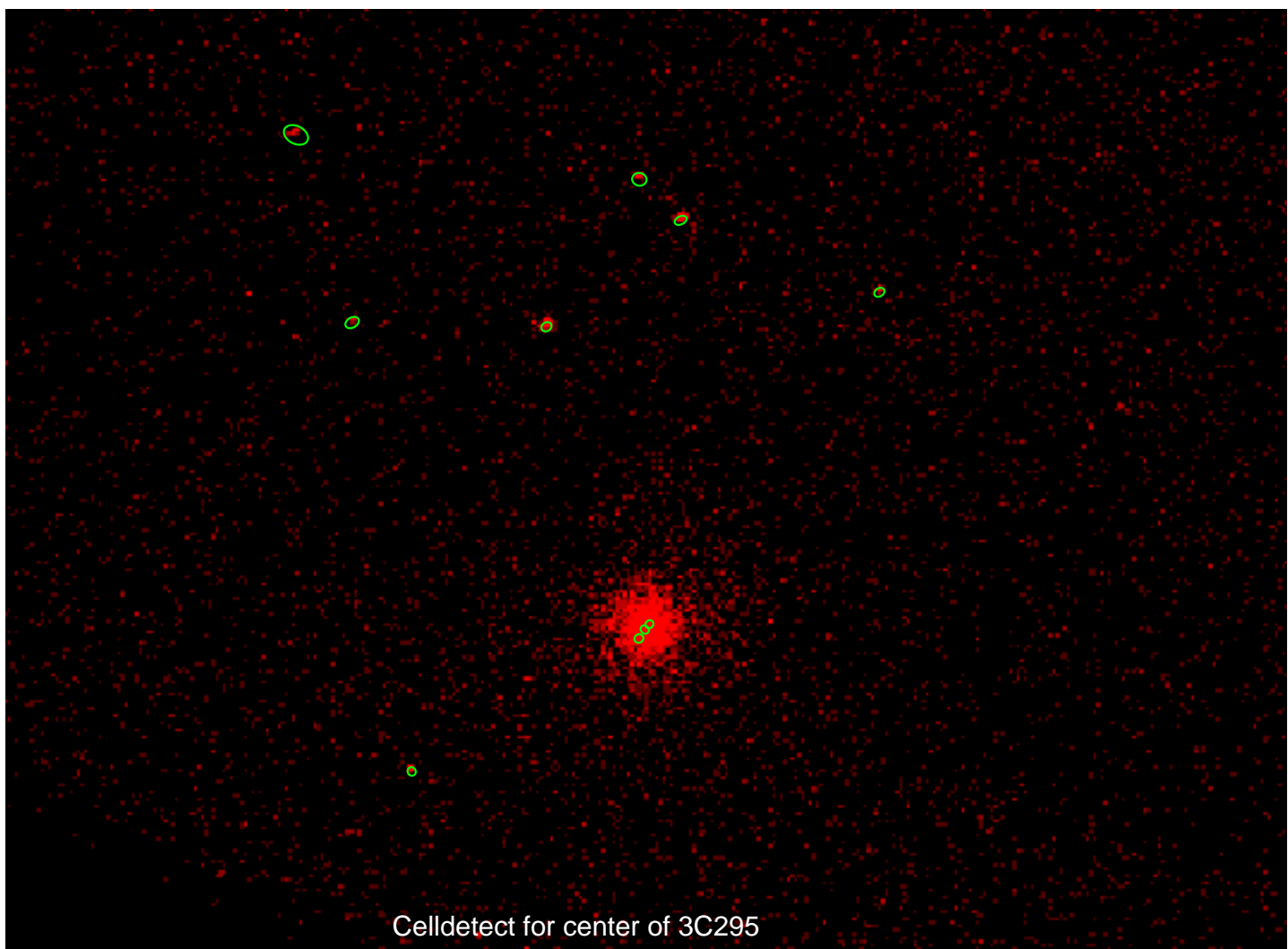


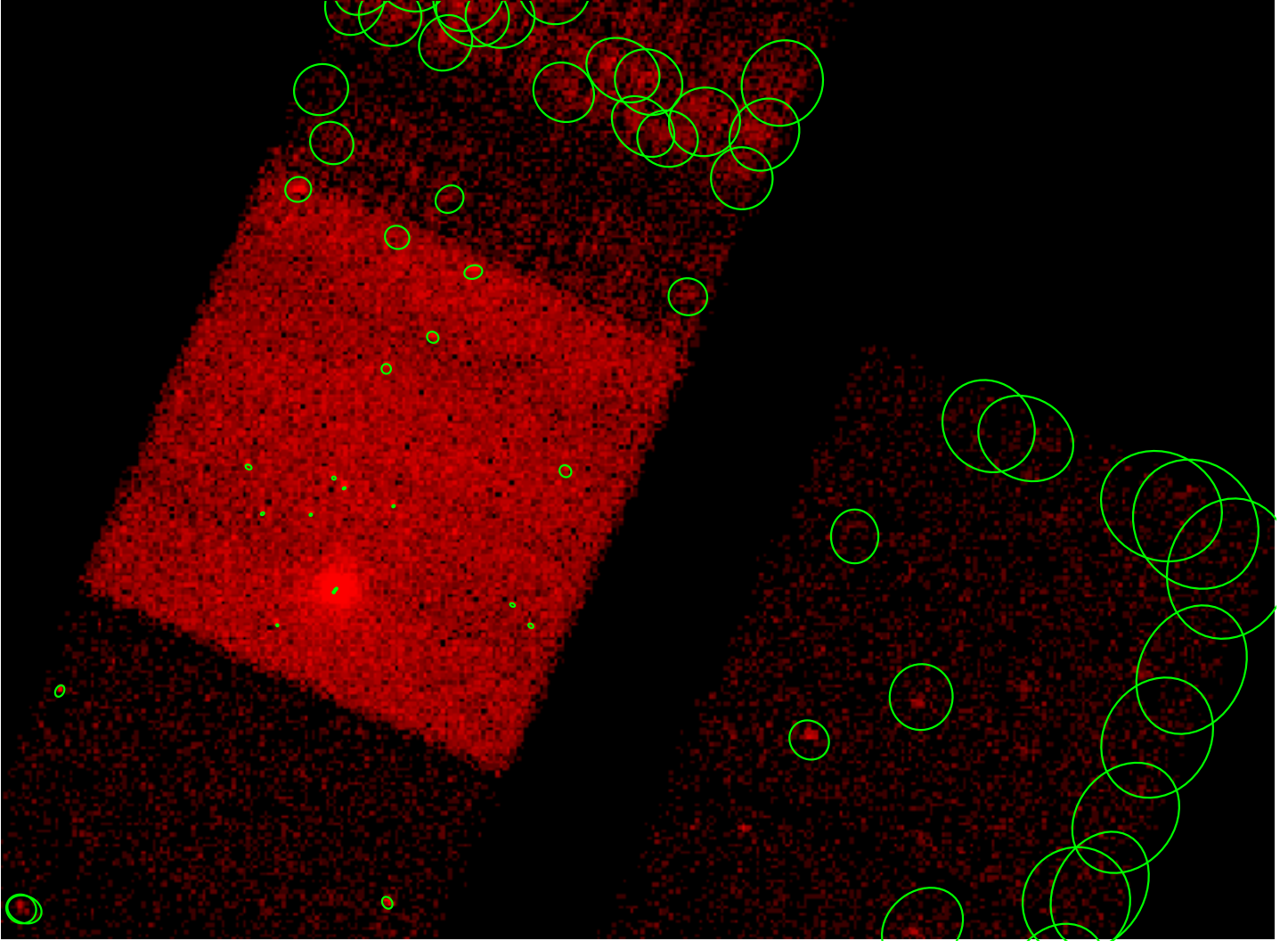


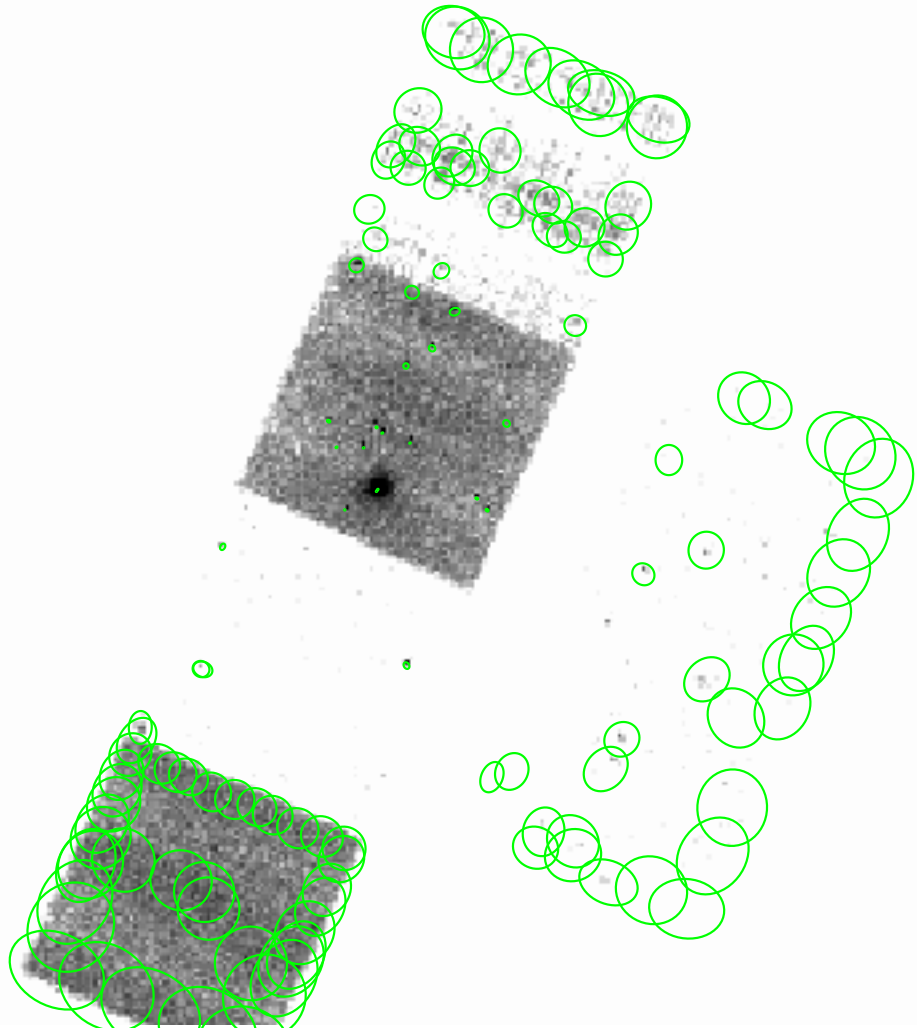
Cellsiz blk=4

252

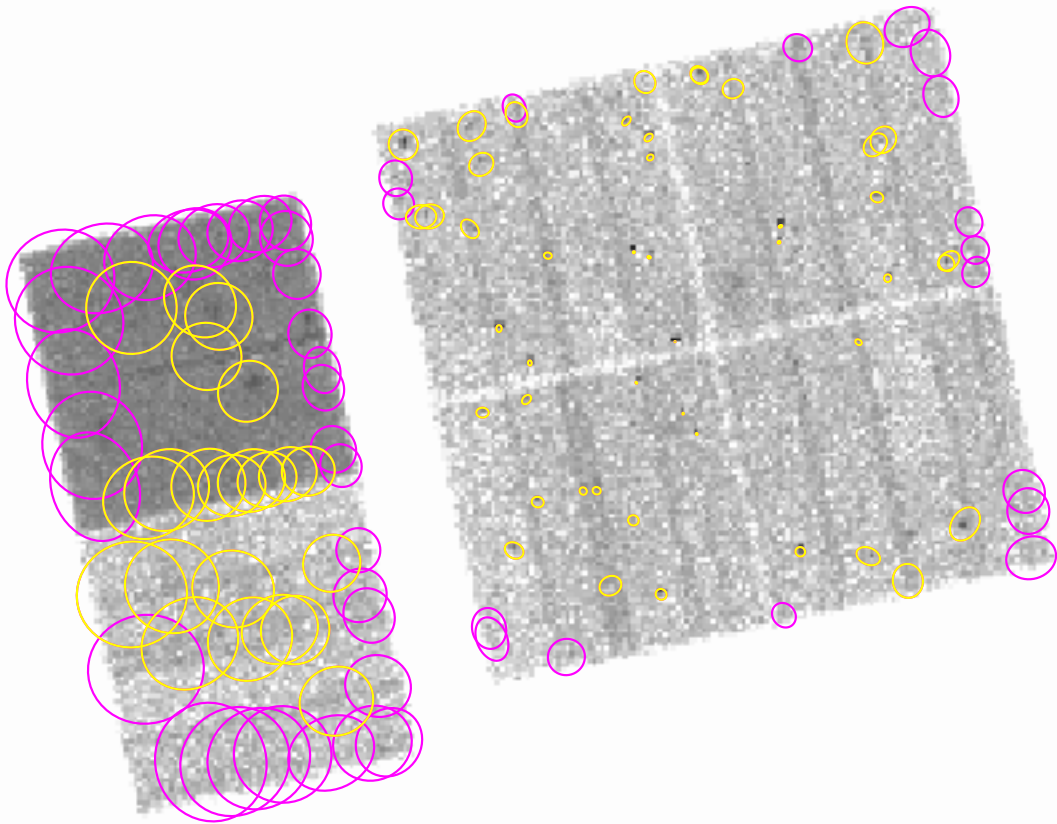
168





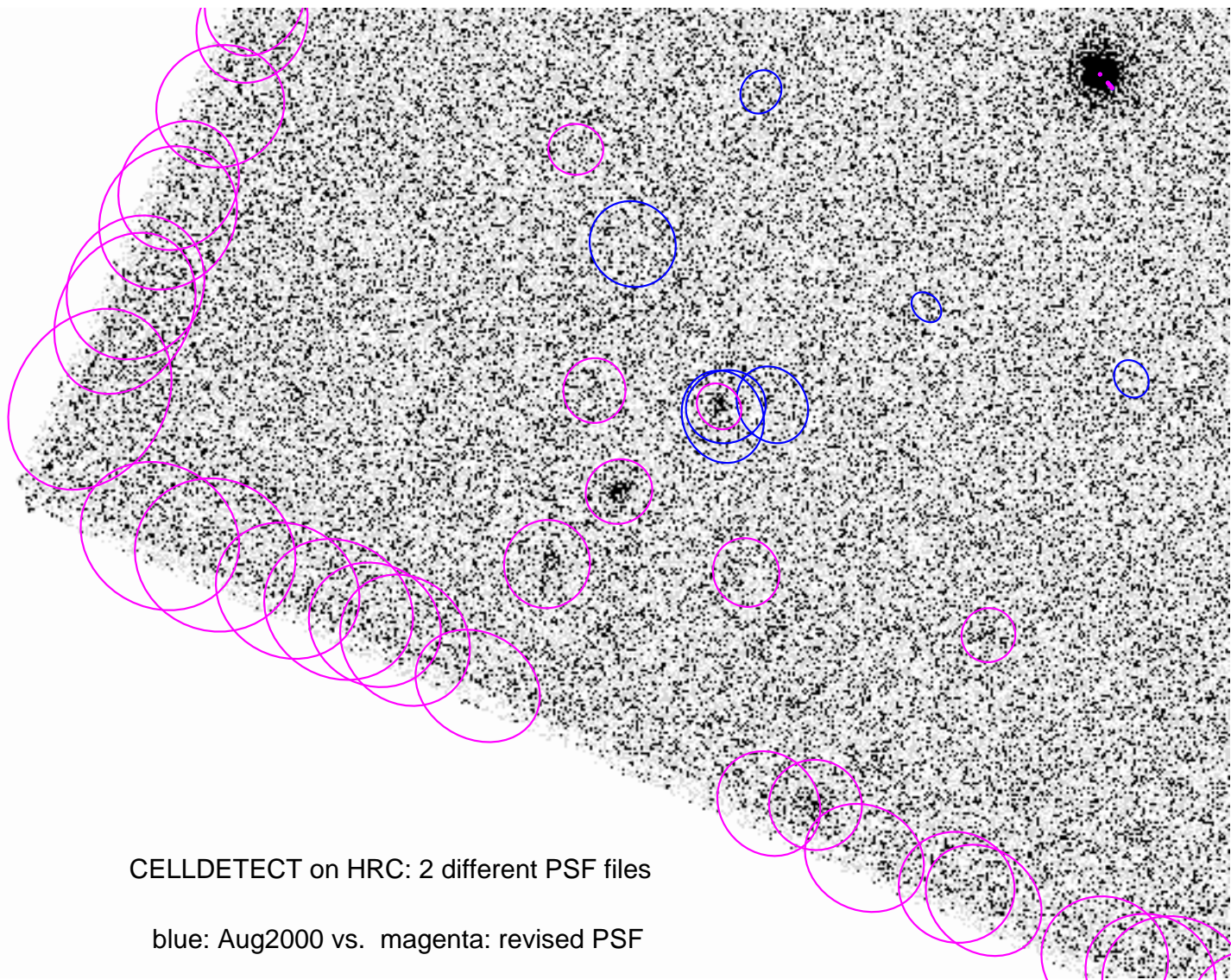


Yellow marks detections with $\text{expratio} > 0.9$; magenta, those rejected.



Parameters for /home/harris/cxcds_param/celldetect.par

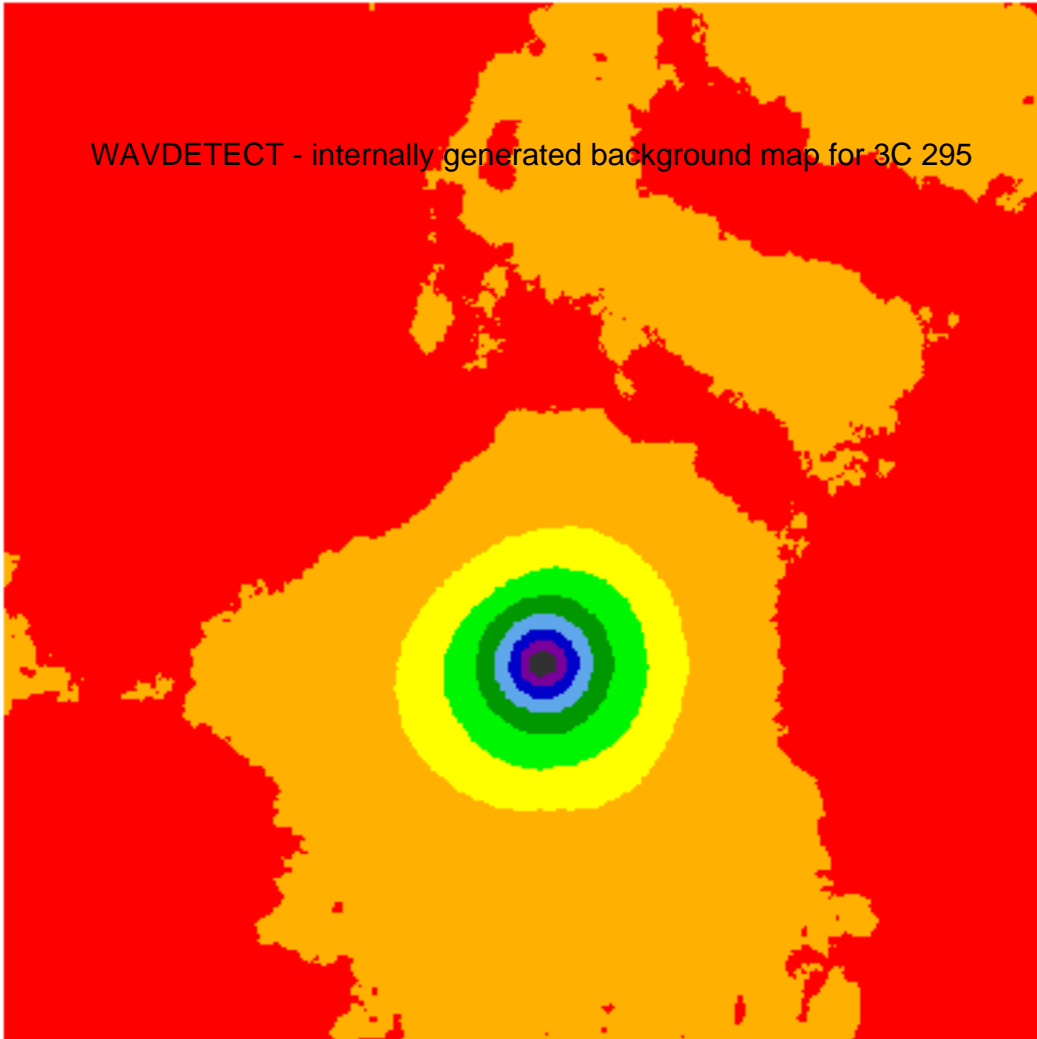
```
#
# celldetect parameter file
#
# input
#
#     infile = ../hrcm00461N000_evt2.fits Input file
#
# output
#
#     outfile = cell_stdpsf_out.fits Output source list
#     (expstk = ) list of exposure map files
#     (regfile = cell_stdpsf.reg) ASCII regions file
#
# output options
#
#     (kernel = default) Output file format
#     (clobber = yes) Overwrite exiting outputs?
#
# output content/format options
#
#     (thresh = 3) Source threshold
#     (findpeaks = yes) Find local peaks?
#     (centroid = yes) Compute source centroids?
#     (ellsigma = 5) Size of output source ellipses (in sigmas)
#     (expratio = 0) cutoff ratio for source cell exposure variation
#
# detect cell size parameters
#
#     (fixedcell = 0) Fixed cell size to use (0 for variable cell)
#     (xoffset = INDEF) Offset of x axis from data center
#     (yoffset = INDEF) Offset of y axis from data center
#     (eband = 1.4967) Energy band
#     (eenergy = 0.8) Encircled energy of PSF
#     (psftable = )echo $ASCDS_CALIB/psfsize_20000830.fits -> /proj/cm/installs/cm.install.A
pr17/data/psfsize_20000830.fits) Table of PSF size data
#     (cellfile = cell_stdpsf_cellsiz.fits) Output cell size image stack name
#
# background parameters
#
#     (bkgfile = ) Background file name
#     (bkgvalue = 0) Background count/pixel
#     (bkgerrvalue = 0) Background error
#
# using defaults is recommended here
#
#     (convolve = no) Use convolution?
#     (snrfile = ) SNR output file name (for convolution only)
#
# run log verbosity and content
#
#     (verbose = 0) Log verbosity level
#     (log = no) Make a celldetect.log file?
#
# mode
#
#     (mode = ql)
```

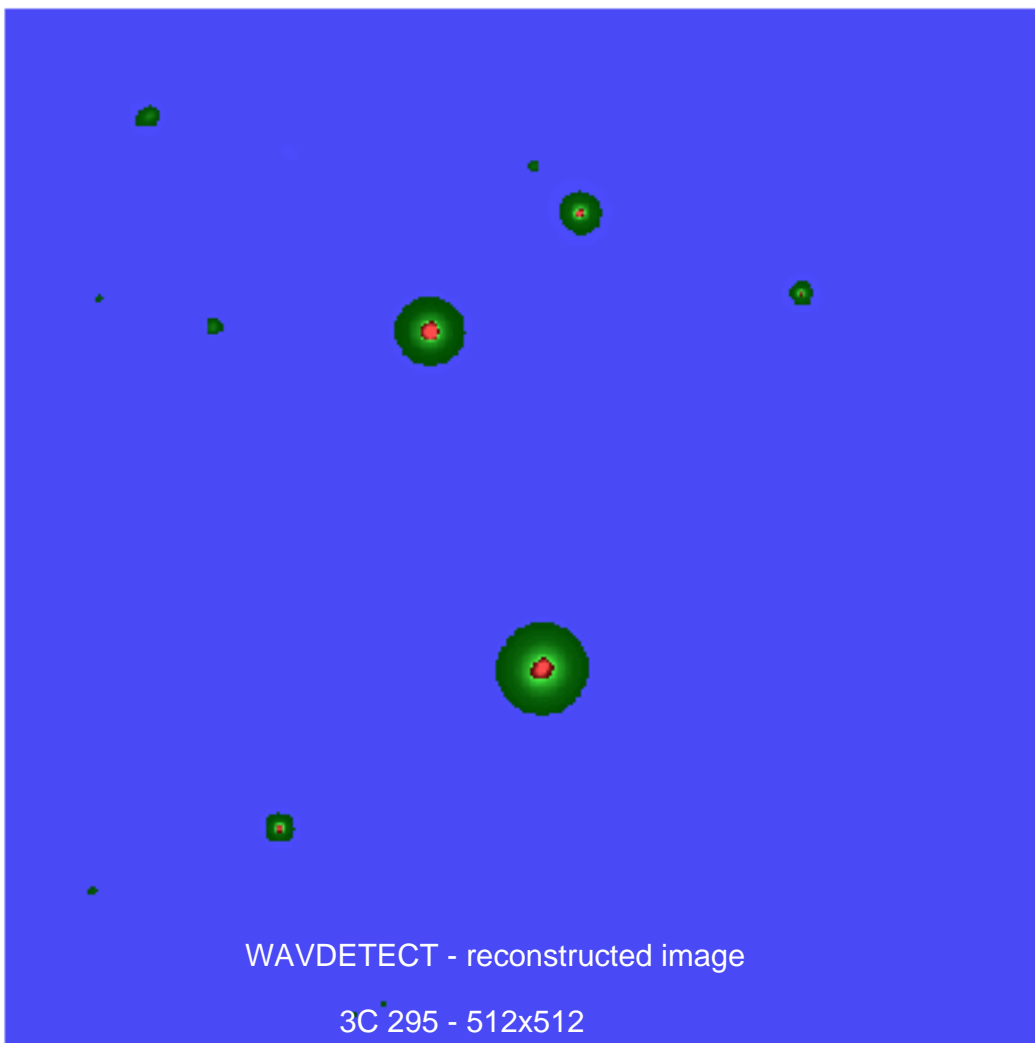



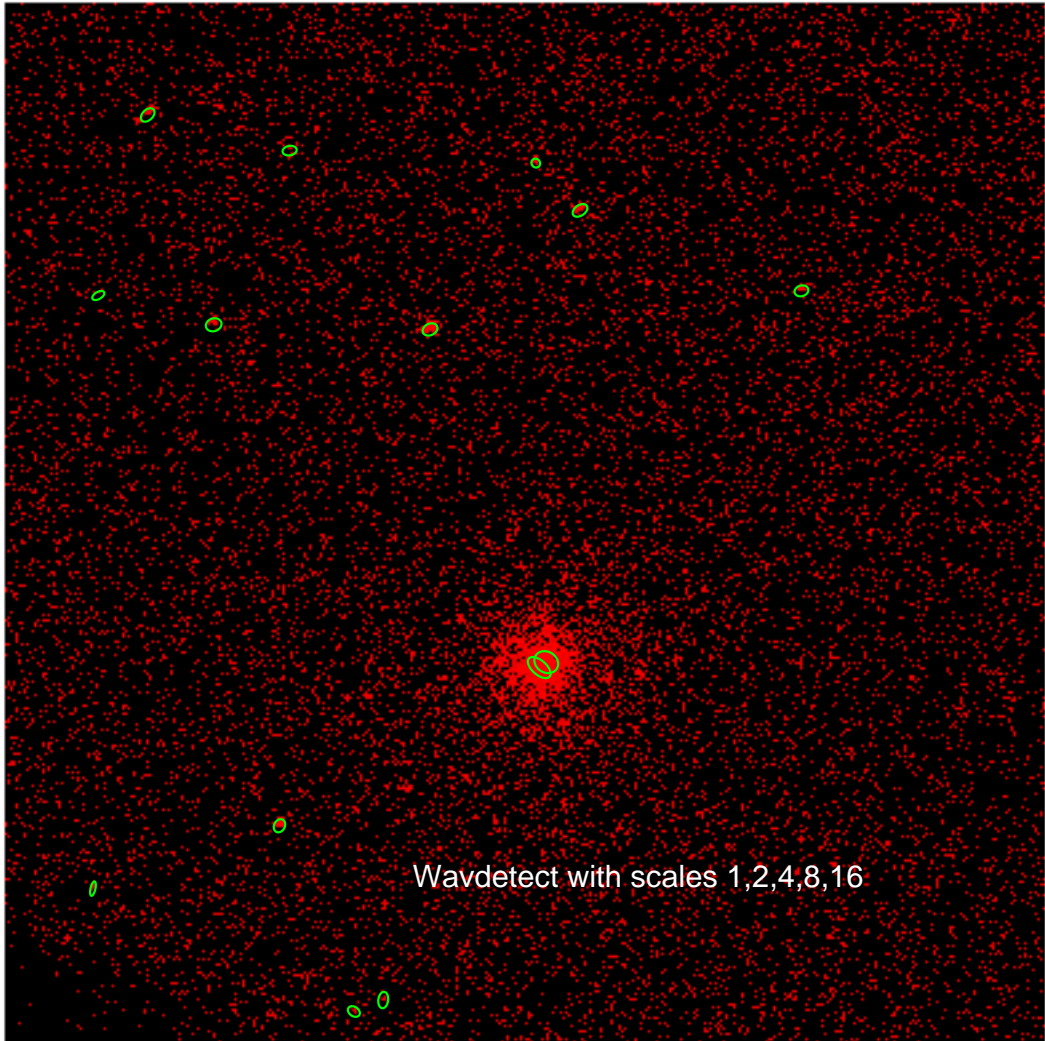
CELLDETECT on HRC: 2 different PSF files

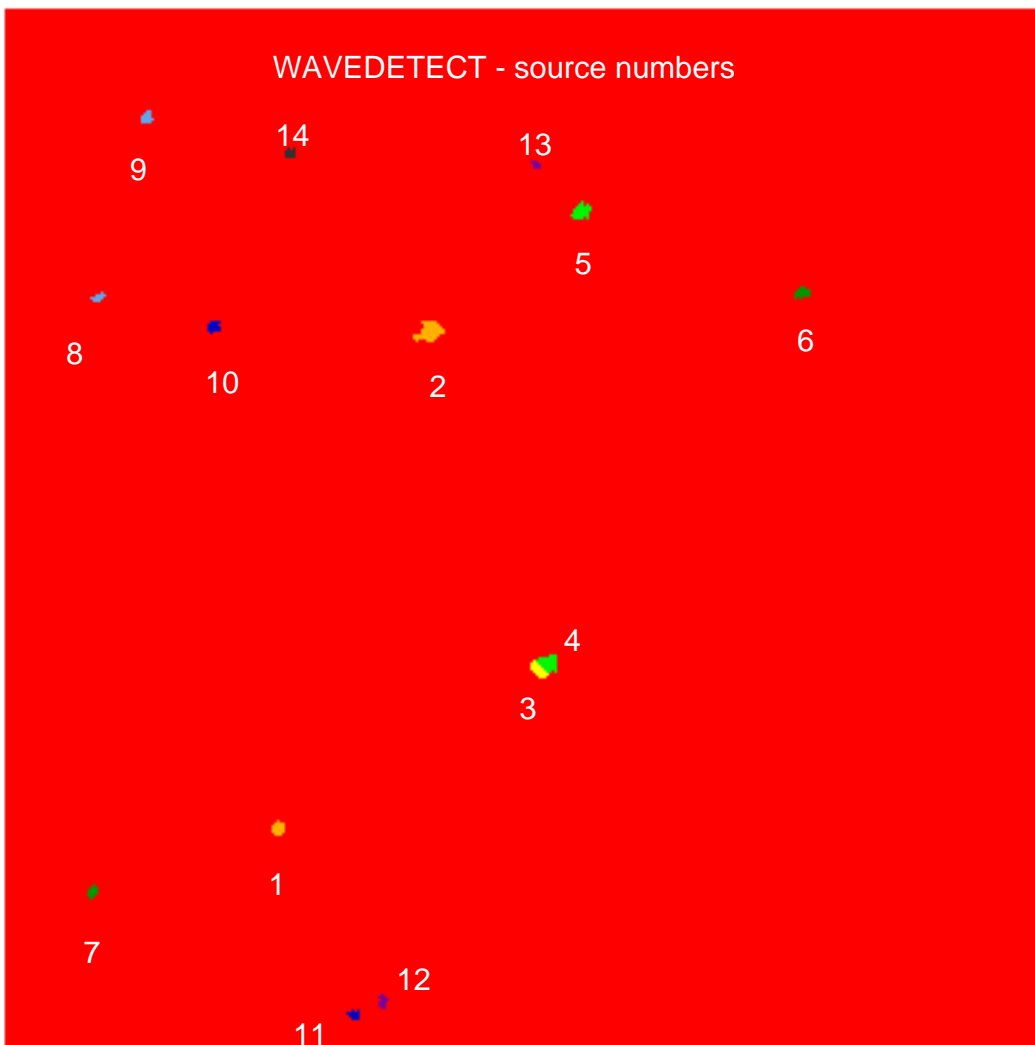
blue: Aug2000 vs. magenta: revised PSF

WAVDETECT - internally generated background map for 3C 295









Parameters for /home/harris/cxcds_param/wavdetect.par

```
#
# parameter file for wavdetect
#
# input
#
#     infile = ../bin32.fits      Input file name
#
# output
#
#     outfile = wav_bin32new_out.fits Output source list file name
#     scellfile = wav_bin32new_num.fits Output source cell image file name
#     imagefile = wav_bin32new_img.fits Output reconstructed image file name
#     defnbgfile = wav_bin32new_bkg.fits Output normalized background file name
#     (regfile = wav_bin32new.reg) ASCII regions output file
#
# output options
#
#     (clobber = yes)           Overwrite existing outputs?
#     (kernel = default)       Output file format (fits|iraf|default)
#     (ellsigma = 5)           Size of output source ellipses (in sigmas)
#     (interdir = .)           Directory for intermediate outputs
#
#####
#
# wtransform parameters
#
# optional input
#
#     (bkginput = )           Input background file name
#     (bkgerrinput = no)     Use bkginput[2] for background error
#
# output info
#
#     (outputinfix = )       Output filename infix
#
# output content options
#
#     (sigthresh = 1e-07)    Threshold significance for output source pixel list
#     (bkgthresh = 0.001)    Threshold significance when estimating bkgd only
#
# exposure info
#
#     (exptime = 0)          Exposure time (if zero, estimate from map itself
#     (expfile = )           Exposure map file name (blank=none)
#     (expthresh = 0.1)      Minimum relative exposure needed in pixel to analyze it
#
# background
#
#     (bkgttime = 0)         Exposure time for input background file
#
# scales
#
#     (scales = 1 2 4 8 16)  wavelet scales (pixels)
#
# iteration info
#
#     (maxiter = 3)          Maximum number of source-cleansing iterations
#     (iterstop = 0.0001)    Min frac of pix that must be cleansed to continue
#
# end of wtransform parameters
#
#####
```

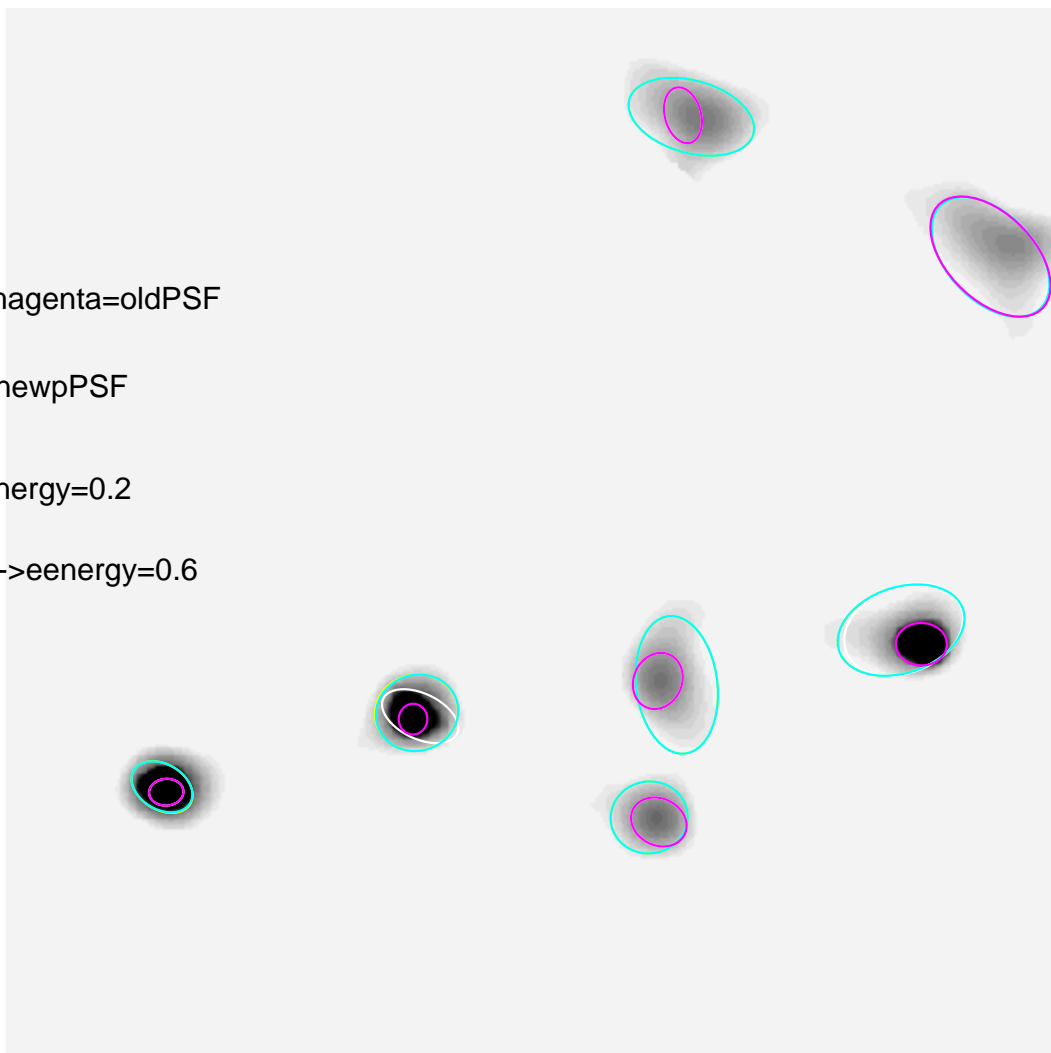
```
#####  
#  
#   wrecon parameters  
#  
#   PSF size parameters  
#  
#       (xoffset = INDEF)           Offset of x axis from optical axis  
#       (yoffset = INDEF)           Offset of y axis from optical axis  
#       (eband = 1.4967)            Energy band  
#       (eenergy = 0.393)           Encircled energy of PSF  
#       (psftable = /pool14/mk/PSFSIZE/psfsize4_16_2001.fits) Table of PSF size data  
#  
#   end of wrecon parameters  
#  
#####  
#  
#   run log verbosity and content  
#  
#       (log = no)                  Make a log file?  
#       (verbose = 0)               Log verbosity  
#  
#   mode  
#  
#       (mode = ql)
```

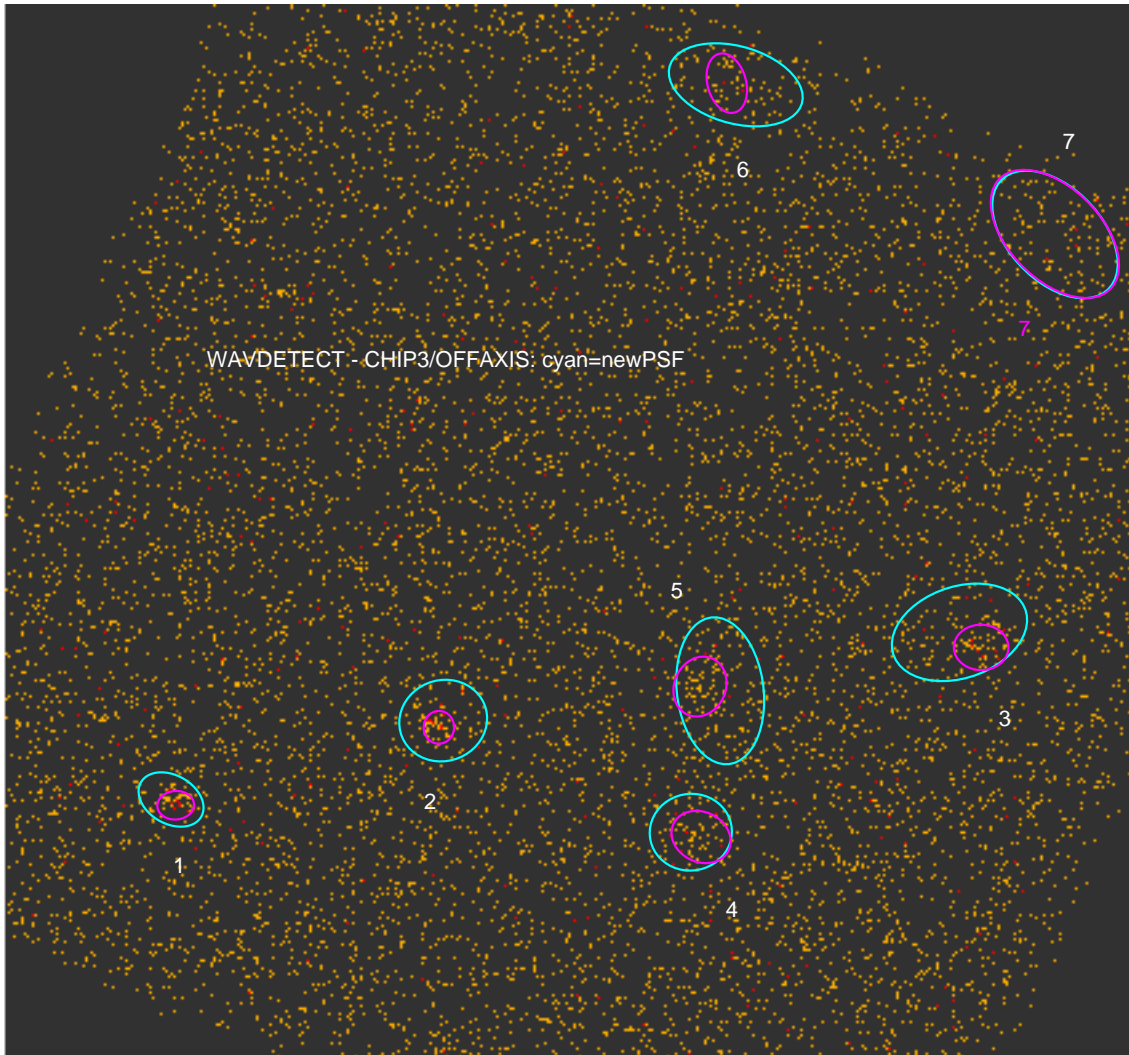
Chip3: magenta=oldPSF

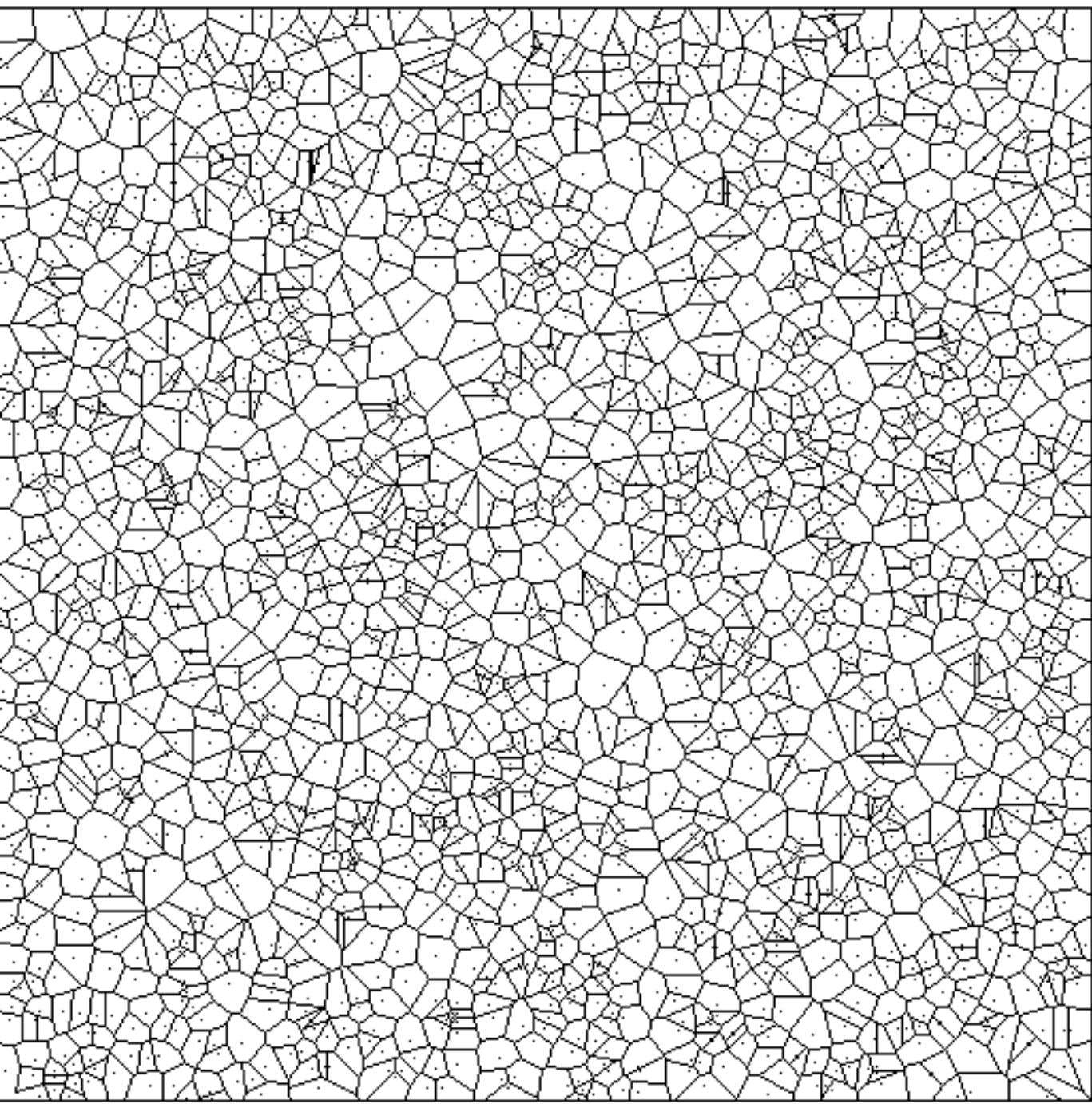
cyan=newpPSF

white->eenergy=0.2

yellow->eenergy=0.6

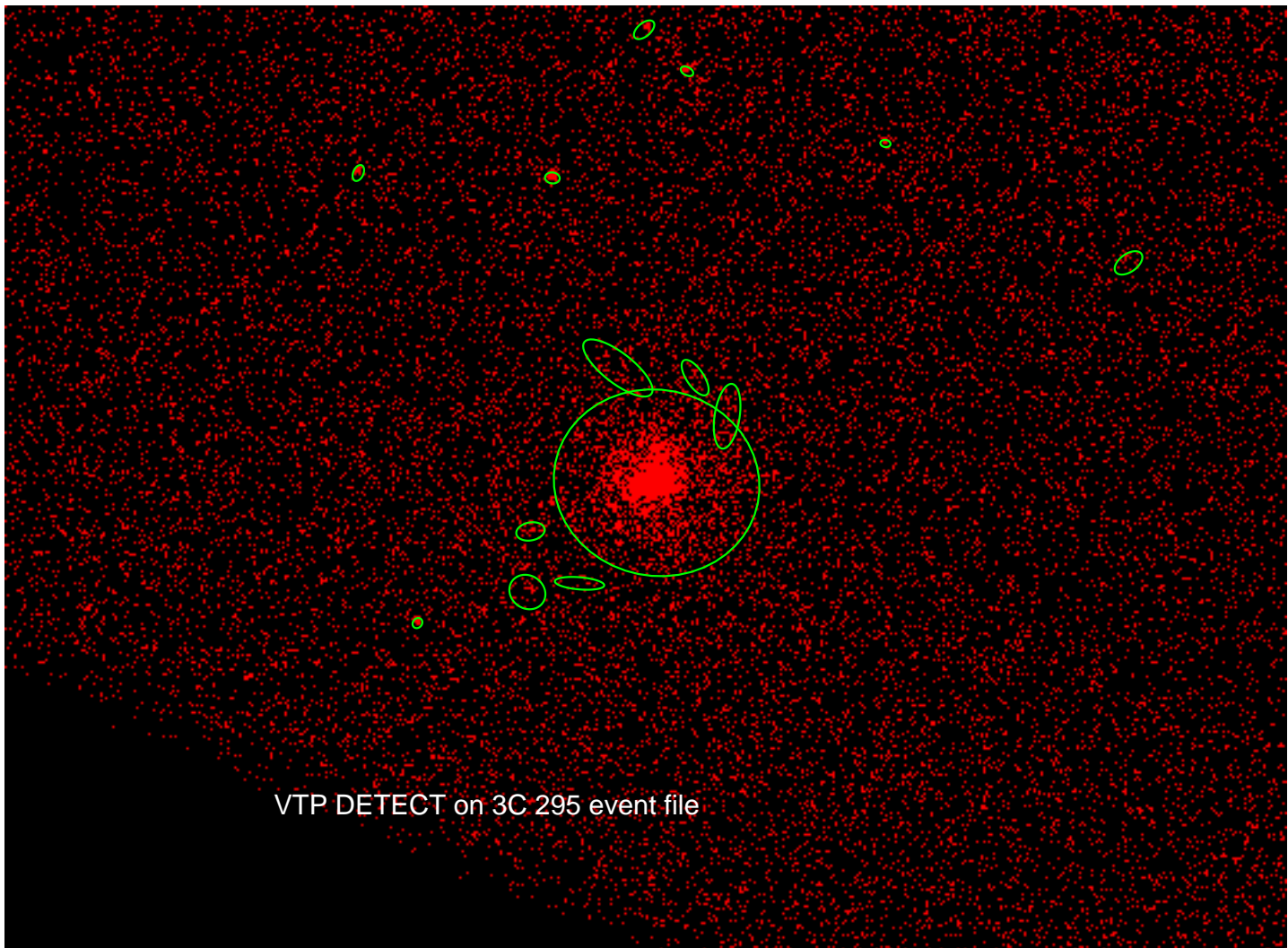






The image displays a large, irregularly shaped field of red noise against a black background. The noise is dense and granular. Several green contours are overlaid on the image, highlighting specific features. A prominent feature is a bright, circular spot at the bottom center, surrounded by a complex, multi-layered green contour. Other smaller, simpler green contours are scattered throughout the field, primarily in the upper and middle sections. The text "VTP detect on 3C295" is centered in the image.

VTP detect on 3C295



VTP DETECT on 3C 295 event file

Parameters for /home/harris/cxcds_param/vtpdetect.par

```
#
# parameters for vtpdetect
#
# inputs -- can either be an image or table
#
    infile = 578chip7_evt2.fits[EVENTS][cols x,y] Input file name
    expfile = none                               Exposure map file name
#
# output
#
    outfile = vtp578chip7.fits Source list output file name
#
# processing parameters
#
    scale = 1                                   Threshold scale factor
    limit = 1e-06                               Max. probability of being a false source
    coarse = 10                                 Minimum number of events per source
    maxiter = 10                                Maximum number of iterations to allow
#
# SAOImage regions
#
    (regfile = vtp578chip7.reg) name for ASCII output region files
    (ellsigma = 3)                           Size of output source ellipses (in sigmas)
    (edge = 2)                               How close to edge of field to reject events
    (superdo = no)                           Perform Super Voronoi Cell procedure
#
# probably use defaults for these...
#
    (maxbkgflux = 0.8)                        Maximum normalized background flux to fit
    (mintotflux = 0.8)                        Minimum total flux fit range
    (maxtotflux = 2.6)                        Maximum total flux fit range
    (mincutoff = 1.2)                         Minimum total flux cutoff value
    (maxcutoff = 3)                           Maximum total flux cutoff value
    (fittol = 1e-06)                          Tolerance on Poission fit
    (fitstart = 1.5)                          Initial background fit starting scale factor
#
# user setable parameters
#
    (clobber = no)                            Overwrite if file exists
    (verbose = 0)                              Debug level
    (logfile = stderr)                         Debug file name
    (kernel = default)                        Output format
#
# mode
#
    (mode = ql)
```